

Appendix D – Summary of Environmental Assessment Process

Table D-1 Screening Process in Accordance with IAN 125/15

Aspects Considered	Yes / No / Uncertain?	Is this likely to result in significant effects Yes / No / Uncertain
General		
Will construction, operation of the project involves actions which will cause changes in the locality, land use, topography, in waterbodies, etc.)?	Yes – options will involve new road alignments and changes to the horizontal / vertical alignment of exiting road network.	Uncertain – further assessment is required to develop the zone of theoretical visibility and to understand potential physical impacts to statutory / non-statutory sites / known and unknown heritage assets and land use relating to private assets.
Will construction or operation of the project use natural resources such as land, water, materials or energy, especially any resources which are non-renewable or in short supply?	Yes – construction will require virgin materials to construct the options including: concrete, metal and wood.	No – materials used in road construction are generally not thought to be rare and in short supply.
Human Health		
Will the project involve the use, of substances or materials which could be harmful to human health or the environment?	Yes – a number of substances used during construction are considered harmful to human health including hydrocarbons, coatings with high volatile organic compounds and materials which are considered caustic e.g. cement.	No – all hazardous materials will be controlled through the CEMP and best practice will be adhered to.
Will the project introduce any new risk of accidents during construction or operation which could affect human health or the environment?	Yes – during construction traffic management could increase the risk of accidents involving the interface between the public and construction plant and vehicles. In addition, there are a number of potentially contaminated sites which could be disturbed during construction.	Uncertain – Further assessment and details of traffic management is required.
Materials		
Will the project produce wastes during construction or operation or decommissioning?	Yes – Waste can include excavated materials from key infrastructure locations, excess materials, redundant furniture, road planings site, waste and contaminated materials during	No – the EU Waste Directive Waste Hierarchy and NIEA policy will be adhered to placing emphasis on reducing waste, re-using

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	construction. During operation waste associated with maintenance can include rubbish from roadside or replacement materials.	materials and recycling. In addition, the waste produced will be managed through a SWMP.
Air Quality		
Will the project release pollutants or any hazardous, toxic or noxious substances to air?	Yes – emissions to air will be limited to exhaust emissions from construction vehicles and plant during construction, maintenance vehicles and vehicle users during operation.	Uncertain – a detailed air quality assessment is likely to be required to understand the impacts of construction and operation on local / regional air quality and sensitive receptors.
Are there any areas which are already subject to pollution e.g. where existing legal environmental standards are exceeded, which could be affected by the project?	<p>The options are not situated within an AQMA. However, two AQMAs have been designated in Armagh:</p> <ul style="list-style-type: none"> • Armagh AQMA – Declared for exceedances of the annual mean NO₂ objective (40µg.m⁻³); and • Greenpark Terrace Armagh AQMA – Declared for exceedances of the annual mean NO₂ objective. 	See above
Noise		
Is the environment around the project noise sensitive?	Yes – numerous sensitive receptors within 600m of the options.	Uncertain – a detailed noise assessment is likely to be required to understand the impacts of construction and operation on sensitive receptors.
Will the project cause noise and vibration?	Uncertain – the difference between the existing noise environment and the future one with the options is not understood. However, if speeds and flows increase an increase in noise and vibration is likely.	See above

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Water Quality		
Will the Project lead to releases of pollutants onto the ground or into surface waters, groundwater?	Uncertain – there are three main river. Whilst the drainage design is being developed, the number of watercourse diversions is unknown. Further surveys and design assessment will be re-visited at DMRB Stage 3.	Uncertain – designing in drainage which reduces impacts to the water environment should be possible. However, in the absence of a detailed drainage strategy and design potential effects cannot be ruled out at screening.
Are there any areas characterised by flooding which are affected by the project?	Yes – the run off for the options is likely to outfall into nearby watercourses.	Uncertain – It is recommended that a Flood Risk Assessment is undertaken at Stage 3. However, it is anticipated that there is enough space for attenuation if required.
Are there any areas which are already subject to pollution e.g. where existing legal environmental standards are exceeded, which could be affected by the project?	No	Not relevant.
Ecology		
Are there any areas which are protected under international or national or local legislation for their ecological, value, which could be affected by the project?	No - There are no national or international statutory designated sites within the study area. Sites of Local Nature Conservation Interest (SLNCIs) are designated by the local authority. At the time of writing, information on the location of these designations was not available. However, no SLNCIs were identified within the study area during previous ecological desk studies undertaken for the options.	Not relevant.
Are there any other which are important or sensitive for reasons of their ecology, which could be affected by the project?	See above	Uncertain – impacts to local wildlife sites could be direct and indirect from landtake and linkages to existing drainage.

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Are there any areas which are used by protected, important or sensitive species of fauna or flora, which could be affected by the project?	Yes –species records on CEDaR included Grey Heron and Holly blue. Phase 1 habitat survey notes mammal holes, ascribed to badger, and habitats suitable for roosting bats within 1km of the options.	Uncertain – further survey and assessment work is required to understand the presence of particular species in relation to the options.
Landscape		
Are there any areas or features of high landscape or scenic value which could be affected by the project?	Yes – LLCA 1 - Drumlin Agricultural Landscape could be affected by the Option 12.	Uncertain – a draft ZTV has been developed and further assessment of the feature in relation to the landscape and the options should be undertaken at subsequent stages. It is thought that due to the existing topography designing in mitigation measures are likely to reduce impacts.
Is the project in a location where it is likely to be highly visible to many people?	Yes – the increase in vertical alignment will mean that the options will be visible within the existing landscape. There are numerous residences within 100m of the options.	Uncertain – a draft ZTV has been developed and in the absence of a detailed landscape mitigation design ruling out potential effects to nearby receptors is not possible at screening.
Cultural Heritage		
Are there any features of historic or cultural importance that could be affected by the project?	Yes – The assessment of the options identifies the potential to impact upon unknown elements of the historic environment Designated built heritage assets within close proximity to Option 12 junction at Portadown Road may have impact on the settings of Little Castle Dillon, Grade B Listed Building. Option 12 and Option 16 will impact on historic agricultural landscape assets which may be visually impacted upon.	Uncertain – both setting and physical impacts could affect Cultural Heritage assets.
Geology and Soils		

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Are there any areas which contain any sensitive geological sites or valuable soil resources that are likely to be affected by the project?	No – no ASSIs or records of local sites of geological importance. Landuse in the surrounding area appears to be mainly agricultural, residential, and commercial and includes Ardmore Recreation Centre.	No - value of known sites and soil quality indicates that significant effects are not anticipated.
People and Communities		
Will the project result in social changes, for example, in demography, traditional lifestyles, employment?	Uncertain –impact upon agricultural employment and farming operations.	Uncertain - at this stage consultation with owners of agricultural land was considered inappropriate before more detailed mitigation proposals could be developed
Are there any routes or facilities on or around the location which are used by the public for access to recreation or other facilities, which could be affected by the project?	Yes – Community land (open space wedge) at Edenaveys could be severed by Option 12 and Option 16. There are several sensitive receptors within 600m of the options which could be impacted by noise increase / decrease or within 200m affected by air quality deterioration. Crossing facilities at both junctions are likely to be improved for NMUs.	Uncertain – further assessment work is required to understand the level of impact to the community land if mitigation could reduce the impacts to this facility. See noise and air quality screening above.
Are there any transport routes on or around the location which are susceptible to congestion or which cause environmental problems, which could be affected by the project?	Uncertain – both the strategic and local road network could be impact by the options.	Uncertain – during the detailed DMRB assessment of the options traffic data will indicate how the options could impact the strategic and local road network.
Is the project located in a previously undeveloped area where there will be loss of greenfield land?	Uncertain – the land either side of the options at Hamiltonsbawn road / proposed roundabout is allocated for development. However, Option 12 and Option 16 traverses undeveloped land and is considered greenfield.	Uncertain – further assessment work is required to understand the level of impact on greenfield site.
Are there existing land uses on or around the location e.g. homes, gardens, other private property, industry, commerce, recreation,	Yes – Gardens and driveways, Ardmore Recreation Centre and commercial properties	Uncertain – impacts to Gardens and driveways, Ardmore Recreation Centre and commercial property should be informed by

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public open space, community facilities, agriculture, forestry, tourism, mining or quarrying which could be affected by the project?	off Hamiltonsbawn road will be impacted by the options. The options will result in agricultural landtake.	consultation to understand the value and if mitigation measures can reduce these to not preclude existing or future use. The options are likely to have permanent impacts on soils and agricultural land, mainly due to land take. Further assessment and consultations undertaken with the asset owners to understand value or importance.
Are there any plans for future land uses on or around the location which could be affected by the project?	Uncertain – the options could potentially impact on planning permissions allocated for development.	Uncertain – some of the development land / planning permissions have a previous allocation and therefore may / may not be considered affected by the options. Indeed, the options could be potentially beneficial due to the nature of the allocation.
Are there any areas on or around the location which are occupied by sensitive land uses e.g. hospitals, schools, places of worship, community facilities, which could be affected by the project?	Uncertain – sensitive receptors such as Grove Nursery School, Armagh Community Hospital, Orchard Leisure Centre, Ardmore Recreation Centre and a number of churches . Noise and air quality changes could impact these receptors but severance will not.	Uncertain – detailed assessments are required to understand the impacts on these sensitive receptors. However, the options will ensure that crossing facilities will remain the same or be improved.
Cumulative Impacts		
Are there any other factors which should be considered which could lead to the potential for cumulative impacts with other existing or planned activities in the locality?	Uncertain – there are likely interactive cumulative effects between environmental aspects. There will also be inherently cumulative in-combination modelled in the traffic model. It is unlikely that other planned developments that are not road schemes will result in cumulative impacts with the options.	Uncertain – understanding of the significance of both interactive and in-combination cumulative impacts will require detailed assessment of environmental aspects and traffic data. An updated search of 'other developments' through the ABCB planning portal will be required.

Table D-2 Screening Process in Accordance with IAN 125/15

Questions considered	Yes / No / Uncertain
Will there be a large change in environmental conditions?	Uncertain – changes to air quality, noise, cultural heritage, ecology, visual receptors, and contaminated land require detailed assessment in order to evaluate the magnitude of impact as a result of the options.
Will the features be out of scale with the existing environment?	Yes – the new alignment / changes existing alignment (pre mitigation) will be visible, existing conditions indicate the existing road is well screened.
Will the effects in the area be unusual or particularly complex?	Uncertain – the potential effects relating to disturbance of protected species habitats could result in complexities, but require further detailed assessment. Air quality, noise will require a detailed assessment to understand if potential design interventions are required to reduce impacts. Finally, flood risk and attenuation could present complexities regarding the need for land take to accommodate mitigation measures
Will the effect extend over a large area?	Uncertain – physical impacts will be adjacent to the road alignment. However, cumulative impacts associated with air quality and noise could be further reaching.
Will many people be affected?	Uncertain – there are numerous residences and other sensitive receptors within 600 metres of the options. Noise monitoring has not been completed for the assessment. It is proposed that noise surveys are completed and the results be included in the Stage 3 assessment. During Stage 3 assessment noise will be subject to a detailed assessment.
Will many other receptors be affected?	Uncertain – see above a number of environmental aspects require detailed assessment to understand if potential effects are likely.
Is there a risk valuable that scarce features or resources could be permanently damaged?	Uncertain –. A number of environmental aspects (ecological or cultural heritage assets) require further assessment to understand if potential effects are likely.
Is there a risk existing environmental standards will be breached or made worse?	No – the impacts on AQMA and the noise monitoring require detailed assessment and monitoring.
Is there a risk that the viability of protected or vulnerable /sensitive sites/features/species could be permanently affected?	Uncertain – European species which require further survey work and assessment and potentially the development of site specific mitigation measure to minimise risks.
Is there a high probability of the effect occurring?	Uncertain – detailed assessment is required to understand the probability of significant effects in relation to environment aspects as identified above. However, there is a high probability that potential effects relating to the options will be mitigatable.

Questions considered	Yes / No / Uncertain
Will the effect continue for a long time?	Uncertain – air quality, noise, water and visual impacts will be measured in the design years (2020 and 2035) as part of the detailed DMRB assessment.
Will the effect be continuous or intermittent?	Uncertain – air quality and noise impacts would be considered continuous. However, detailed assessment if required to understand the magnitude of the potential impacts.
Will it be difficult to mitigate i.e. avoid or reduce or compensate for the effect?	Uncertain – impacts associated with air quality are complex and difficult to reduce and compensate for.

Table D-3 Summary of Environmental Assessment Process in Accordance with IAN 125/15

Impacts	Topics	Screening for Likely Significant Effects	Scoping		Key Initial Assumptions and Mitigation built into the Design	Assessment			
			Level of Assessment Required			Description of Key Potential Impacts	Mitigation	Description of Likely Significant Effects	
			Simplified	Detailed				Construction	Operation
D / T / P	Air quality	N		✓	N/A	The proximity of 2552 relevant sensitive receptors indicates that 80% are predicted to experience an improvement in air quality in the Opening Year (2020) with Option 12 in operation, 65% for Option 16, and 50% for the 2007 Option, compared to the DM scenario.	Construction impacts will be mitigation through best practiced outline on a draft CEMP prepared at Stage 3.	No likelihood of significant effects. During Stage 3 updated detailed assessment based on finalised traffic data.	

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			Simplified	Detailed				Construction	Operation
D / T / P	Cultural heritage	U		✓	Designated built heritage assets within close proximity to Option 12 junction at Portadown Road may have impact on the settings of Little Castle Dillon, Grade B Listed Building	The assessment of the options identifies the potential to impact upon unknown elements of the historic environment Option 12 and Option 16 will impact on historic agricultural landscape assets which may be visually impacted upon.	Mitigation measures are available which could reduce the magnitude of impacts to Cultural Heritage assets.	There is uncertainty regarding likely significant effects from disturbance of unknown archaeology.	In the absence of specific mitigation uncertainty remains regarding likely significant adverse effects.
D / T / P	Landscape effects	Y		✓	LLCA1 Drumlin Agricultural Landscape	Option 12 would potentially result in adverse impacts on local landscape character (LLCA1 Drumlin Agricultural Landscape).	Development of a detailed landscape design to reduce and mitigate potential impacts to both	Option 12 - High likelihood of significant potential effects. 2007 Option and Option 16 – No / Low likelihood of significant potential effects.	
D / T / P	Visual Impacts	Y		✓	N/A	The options would result in adverse impacts to visual receptors.	landscape character and visual receptors.	High likelihood of significant	More detailed assessment is required to

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			Simple	Detailed				Construction	Operation
								potential effects.	understand the implications for these visual receptors.
D / T / P	Nature Conservation	U		✓	Loss, fragmentation and degradation of habitats, including areas supporting protected species	The options could have potential impacts on confirmed presence of habitat suitable for use by bats and badger; evidence of badger recorded.	Generic mitigation measures have been proposed which would mitigate impacts to some, habitats adjacent to the option.	In the absence of a detailed construction programme and working methods there is uncertainty regarding the potential effects on protected species.	Given the requirement for further surveys, assessment, and the absence of site specific mitigation measures. There is uncertainty regarding likely significant adverse effects to the following ecological receptors:

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			Simpl e	Detailed				Construction	Operation
									<ul style="list-style-type: none"> Badger and Bats
D / T / P	Geology and Soils	N / U		✓	Minimise the use of piling and percussive drilling required.	<p>The options will result in permanent adverse impacts on superficial and bedrock geology.</p> <p>The options are likely to have permanent moderate impacts on soils and agricultural land, mainly due to land take.</p> <p>Ground disturbance within close proximity to potentially contaminated site within proximity to the Options, could result in permanent adverse impacts</p>	<p>Targeted investigations are recommended as part of wider geotechnical investigation to establish whether residual contamination associated with the former land use are present along the Options.</p> <p>The investigation should also determine whether the presence of contaminants</p>	<p>There is uncertainty regarding the permanent adverse impact on human and ecological receptors.</p>	

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			Simple	Detailed				Construction	Operation
						due to the exposure of receptors to potentially harmful contaminants.	would pose a risk to the options, or whether construction works would pose a risk to wider environmental receptors. If contaminants are present and are assessed at significant concentrations, the implementation of a remediation programme should also be undertaken.		
D / T	Materials and Waste	N	✓		Minimise the extent of new infrastructure required	The key potential impacts associated with materials are expected to arise from:	Numerous mitigation measures include a materials	Low likelihood of significant effects. There is uncertainty regarding likely significant and adverse	

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			Simple	Detailed				Construction	Operation
					Use geotechnically and chemically suitable materials where appropriate from the excavations on site	<ul style="list-style-type: none"> the transportation of materials to and from site (import and export); the storage of materials on site; decommissioning of existing infrastructure excavation of materials at major infrastructure locations; and disposal of surplus or hazardous materials. 	management plan and a SWMP.	effects on human and ecological receptors.	
D / T / P	Noise and Vibration	U		✓	Minimise the use of piling and percussive	The proximity of relevant sensitive receptors indicates that the options	Specific noise abatement measures may need to	Low likelihood of	There is uncertainty regarding likely

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			Simplified	Detailed				Construction	Operation
					drilling required to construct the elevate section of the options, to reduce noise impacts during construction.	could result in adverse impacts due increased noise during construction and operation.	be incorporated as part of a CEMP, which would be implemented during the construction phase. At this stage of the assessment and in the absence of baseline noise monitoring survey data and detailed traffic data, the potential need and extent of operational mitigation measures is unknown.	significant effects	significant effects. During Stage 3 assessment traffic screening and air quality dispersion modelling will determine likely significant effects

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D / T / P	People and Communities	U		✓	<p>Be constructed sequentially to minimise construction and traffic management impacts</p> <p>The inclusion of upgraded crossing points for NMUs</p>	<p>The options will result in beneficial impacts for vehicle drivers and NMUs</p> <p>The options will result in slight adverse impact on private property (currently used for gardens and driveways)</p> <p>The options will result in moderate adverse impact to commercial operations located at the centre of the study area. Mainly around the proposed roundabout of the proposed route alignment.</p> <p>Option 12 and Option 16 will result in moderate adverse impact to agricultural,</p>	<p>Beyond that which has been included in the design no mitigation measure are proposed at this stage for People and Communities. During Stage 3 further consultation with users and owners of the receptors identified should be sought in order to development appropriate measures to reduce adverse impacts identified.</p>	<p>There is a low likelihood that the option would have significant effects on private property (currently used for gardens and driveways)</p> <p>There is uncertainty (Option 12) / low likelihood (2007 Option and Option 16) could have significant adverse effects on commercial operations located at the centre of the study area. Mainly around the proposed roundabout of the proposed route alignment.</p> <p>There is uncertainty that Option 12 and Option 16 will result in significant adverse effects on agricultural, community and development land.</p>	

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			Simple	Detailed				Construction	Operation
						community and development land.			
D / T / P	and the Water Environment	U		✓	Any new drainage will discharge into surface waters Details of the watercourses affected by outfall construction are provided in Table 7.10.7.	Increase in impermeable area may increase pollution run off and a slight decrease in water quality, subsequently leading to potential impact on the three main river. In addition, the increase in impermeable area could result in adverse impacts from increased flood risk.	Mitigation ranges from adherence to best practice during construction and site specific measures which will be developed during Stages 3 in parallel with the drainage strategy and flood risk strategy and design.	Assessment of the proposed scheme indicates that there is uncertainty over whether significant effects are likely in relation to construction pollution.	Option 16 and Option 12 could have potential slight /moderate adverse impact, whilst 2007 Option could have potential slight adverse impacts on groundwater levels and flow and pollution impacts to receiving waterbodies (through increase run off from field drains

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									connected to drainage network) and the potential for adverse impacts due to increased flood risk. However, in the absence of a drainage and flood risk strategy and design there is uncertainty regarding whether the option would result significant adverse effects.